Quick Start Guide

NXC-IRS4 4-Port IR/Serial Control Card

NetLinx Control Cards and NetModules

NetLinx Control Cards can be installed in either the NXF CardFrame, or NetModules. This document provides basic specifications and wiring information for the NetLinx Control cards. For detailed information on the cards, refer to the NetLinx CardFrame, Control Cards, and NetModules Instruction Manual.

NXC-IRS4 4-Port IR/S Control Card

The NXC-IRS4 4-Port IR/S Control Card provides four IR/Serial input control ports with LED status feedback. Each port in the NXC-IRS4 stores programmed commands for IR- or serial-controlled devices.

Specifications

AXC-PTI Specifications	
Power Requirements:	2.7" x 12.8" (96.93 cm x 32.56 cm)
Power	+12 VDC power for sensors
Operation:	• IR 1-4: Four IR/Serial control ports • Input 1-4: Four input ports for closure or 0-5 VDC sensing, 200 mA
Memory	32K of IR memory shared between four ports.
IR Frequency range	Support of high-frequency carriers up to 1.14 MHz.
Status LEDs:	Red LED shows IR transmission activity / yellow LED shows input status activity (2 LEDs per channel). LEDs light to indicate ON status: • LED 1: Channel 1 Input (yellow) • LED 2: Channel 1 IR Out (red) • LED 3: Channel 2 Input (yellow) • LED 4: Channel 2 IR Out (red) • LED 5: Channel 3 Input (yellow) • LED 6: Channel 3 IR Out (red) • LED 7: Channel 4 Input (yellow) • LED 8: Channel 4 IR Out (red)
Connections/wiring:	• Two 2-pin 3.5 mm captive-screw terminals • Two CC-NIRC IR Emitters
Models:	• NXC-IRS4 4-Port IR/S Card • NXM-IRS4 4-Port IR/S NetModule

Pinouts, Signals, and Functions:

NXC-IRS4 Pinouts, Signals, and Functions					
Pin	**Signal**	**Function**	**Pin**	**Signal**	**Function**
1	GND	Signal ground	10	Input #1	Logic input
2	Output #1	IR data	11	Input #2	Logic input
3	GND	Signal ground	12	Input #3	Logic input
4	Output #2	IR data	13	Input #4	Logic input
5	GND	Signal ground	14	Power	+12 VDC
6	Output #3	IR data	15	----------	no connection
7	GND	Signal ground	16	----------	no connection
8	Output #4	IR data	17	----------	no connection
9	GND	Signal ground	18	----------	no connection
			19	----------	no connection
			20	----------	no connection

NXC-IRS4 Channel Assignments

The IRS4 channel settings listed in the following table set the IR output channels. The NXC-IRS4 can process up to two IR or serial device channel setting commands simultaneously. If more than two device commands are sent simultaneously, only the first two devices receive the commands.

NXC-IRS4 Channel Assignments	
Channel	**Description**
1-65,000	Generates the IR or serial command assigned to that channel.
1-199	Provides intelligent feedback; if a channel with an IR command is turned on, the card will turn that channel off.
Ports 1-4	Generates PUSH and RELEASE statements corresponding to the state of inputs 1 - 4. A contact closure to GND is reported as a PUSH. • The PUSH and RELEASE channel is 255. • Channel reporting status is 255. • Channel 255 changes are disabled after receipt of the 'PON' command.

Programming Information

NXC-IRS4 SEND_COMMANDS	

CAROFF
Disables the carrier signal until a CARON command is received.
	Syntax:
	`SEND_COMMAND <DEV>,'CAROFF'`
	Example:
	`SEND_COMMAND IR_1,'CAROFF'`
	Stops transmitting IR carrier signals to the IR_1 port.

CARON
Enables carrier signals (default setting).
	Syntax:
	`SEND_COMMAND <DEV>,'CARON'`
	Example:
	`SEND_COMMAND IR_1,'CARON'`
	Starts transmitting IR carrier signals to the IR_1 port.

CH
Sends IR pulses to select a channel. All channels below 100 are transmitted as two digits. If the IR code for ENTER (#21) is loaded, an Enter will follow the number. If the channel is greater than or equal to 100, the IR function 127 is generated for the one hundred digit.
	Syntax:
	`SEND_COMMAND <DEV>,"'CH',<Channel>"`
	Channel: 0-199
	Example:
	`SEND_COMMAND IR_1,"'CH',18"`
	The NXC-IRS4 performs the following:
	• Transmits IR signals for 1 (IR code 11). The transmit time (duration) is set with the CTON command.
	• Waits until the time (set with the CTOF command) elapses.
	• Transmits IR signals for channel 8 (IR code 18).
	• Waits for the time (set with the CTOF command) to elapse. If the IR code for Enter (IR code 21) exists in the program, the NXC-IRS4 performs step 5.
	• Transmits IR signals for Enter (IR code 21).

CP
Clears buffered IR commands, and sends a single IR pulse. You can set the Pulse and Wait times with the CTON and CTOF commands.
	Syntax:
	`SEND_COMMAND <DEV>,"'CP',<Number>"`
	Number: 1-252 and 256-65,000 (253-255 are reserved)
	Example:
	`SEND_COMMAND IR_1,"'CP',2"`
	Clears the active/buffered commands and pulses IR_1 port's channel 2.

CTOF
Sets the duration of off time (no signal) between IR pulses for channel and IR function transmissions. Off time settings are stored in non-volatile memory. The factory default for channel off time is 5 (.5 second). This command is associated with the SP (single pulse) and CP (clear pulse) commands.
	The CTON command sets the pulse length for each digit and CTOF command sets the time between digits or any other pulse.
	Syntax:
	`SEND_COMMAND <DEV>,"'CTOF',<Time>"`
	Time: 0-255 in tenths of a second increments
	Example:
	`SEND_COMMAND IR_1,"'CTOF',10"`
	Sets the off time between each IR pulse to 1 second.

CTON
Sets the total time of IR pulses transmitted, and is stored in non-volatile memory. The factory default time setting for pulses is 5 (.5 second).
	Syntax:
	`SEND_COMMAND <DEV>," 'CTON',<Time>"`
	Time: 0-255 in tenths of a second increments
	Example:
	`SEND_COMMAND IR_1,"'CTON',20"`
	Sets the IR pulse duration to 2 seconds.

GET MODE
Polls the IR/Serial ports and reports the active mode settings to the device requesting the information.
	Syntax:
	`SEND_COMMAND <DEV>, 'GET MODE'`
	Example:
	`SEND_COMMAND IR_1,'GET MODE'`
	System response example:
	`PORT 4 IR,CARRIER,IO LINK 0`

IROFF
Halts and clears all IR output on the designated port.
	Syntax:
	`SEND_COMMAND <DEV>,'IROFF'`
	Example:
	`SEND_COMMAND IR_1,'IROFF'`
	Immediately halts and clears all IR output signals on the IR_1 port.

POD
Disables active PON (power on) or POF (power off) command settings.
	Channel 255 changes are enabled. This command is used in conjunction with the I/O Link command.
	Syntax:
	`SEND_COMMAND <DEV>,'POD'`
	Example:
	`SEND_COMMAND IR_1,'POD'`
	Disables PON and POF command settings on the IR_1 device.

NXC-IRS4 SEND_COMMANDS (Cont.)

POF
(IR function 28 or 9)
Turns off a device, based on input link.
You can only use the PON and POF commands when an IR device has a linked I/O channel.
	If the IR sensor detects the device is on, IR function 28 is generated in an attempt to turn the device off. If three attempts fail, the card will continue executing commands in the buffer. If there are no commands in the buffer, the card will continue to try until a 'PON' or 'POD' command is received. If it fails to turn the device off, a PUSH and RELEASE is made on channel 254 to indicate a power failure error. If at any time the IR sensor reads that the device is on (such as if one turned it on manually at the front panel), the card automatically attempts to turn the device back off. Channel 255 changes are disabled after receipt of this command.
	Syntax:
	`SEND_COMMAND <DEV>,'POF'`
	Example:
	`SEND_COMMAND IR_1,'POF'`
	Sends power down IR commands 28 (if present) or 9 to the IR_1 device.

PON
(IR function 27 or 9)
Turns on a device, based on input link.
You can only use the PON and POF commands when an IR device has a linked I/O channel.
	If the IR sensor detects the device is off, IR function 27 is generated in an attempt to turn the device on. If three attempts fail, card will continue executing commands in the buffer. If there are no commands in the buffer, the card will continue to try until a 'POF' or 'POD' command is received. If it fails to turn the device on, a PUSH and RELEASE is made on channel 254 to indicate a power failure error. If at any time the IR sensor reads that the device is off (such as if one turned it off manually at the front panel), the card automatically attempts to turn the device back on. Channel 255 changes are disabled after receipt of this command.
	Syntax:
	`SEND_COMMAND <DEV>,'PON'`
	Example:
	`SEND_COMMAND IR_1,'PON'`
	Sends power up IR commands 27 or 9 to the IR_1 port.

PTOF
Sets the time between power pulses in .10-second increments, and is stored in permanent memory. The default system setting is 15 (1.5 seconds).
	Syntax:
	`SEND_COMMAND <DEV>," 'PTOF',<Time>"`
	Time: 0-255 in tenths of a second increments
	Example:
	`SEND_COMMAND IR_1," 'PTOF',15"`
	Sets the time between power pulses to 1.5 seconds for the IR_1 device.

PTON
Sets the duration of power pulses in .10-second increments. Time is stored in permanent memory. The default system setting is 5 (.5 seconds).
	Syntax:
	`SEND_COMMAND <DEV>," 'PTON',<Time>"`
	Time: 0-255 in tenths of a second increments
	Example:
	`SEND_COMMAND IR_1," 'PTON',15"`
	Sets the duration of the power pulse to 1.5 seconds for the IR_1 device.

SET BAUD
Sets the RS-232/422/485 port's communication parameters.
This command is valid only if SET MODE is set to DATA.
	Syntax:
	`SEND_COMMAND <DEV>,'SET BAUD (Baud),(Parity),(Data), (Stop) (485 DISABLE/ENABLE)'`
	Variable:
	Baud: 150, 300, 600, 1200, 2400, 4800, 9600, 19200, 38400 (factory default), 57600, 76800, 115200, 230400
	Parity: N (none), O (odd), E (even), M (mark), S (space)
	Data: 7 or 8 data bits
	Stop: 1 or 2 stop bits
	485 Disable: Disables RS-485 mode and enables RS-232/422
	485 Enable: Enables RS-485 mode and disables RS-234/422
	Example:
	`SEND_COMMAND SOMEDEVICE_1,'SET BAUD 9600,N,8,1, 485 ENABLE'`
	Sets the SOMEDEVICE port's communication parameters to 9,600 baud, no parity, 8 data bits, 1 stop bit, and enables RS-485 mode.

SET IO LINK
Links an IR or Serial port to an I/O channel for use with POD, PON and POF commands.
	Syntax:
	`SEND_COMMAND <DEV>,'SET IO LINK <Number>'`
	Number: 1 - 4
	Example:
	`SEND_COMMAND IR_1,'SET INPUT LINK 1'`
	Sets the IR_1 port link to I/O channel 1. The IR port uses the specified I/O input as power status for processing PON and POF commands.
	
	NOTE: *This command is included for older programs only. The Input port is not an I/O. No output functions are available. 'SET IO LINK' applies the same configuration as the 'SET INPUT LINK' command.*

SET MODE
Sets the IR/Serial ports for IR or Serial-controlled devices connected to a CardFrame or NetModule.
	Syntax:
	`SEND_COMMAND <DEV>,'SET MODE <Mode>'`
	Mode: IR, Serial, or Data
	Example:
	`SEND_COMMAND IR_1,'SET MODE IR'`
	Sets the IR_1 port to IR mode for IR control.

NXC-IRS4 SEND_COMMANDS (Cont.)

SP
Generates a single IR pulse.
	You can use the CTON to set pulse lengths and CTOF for time off between pulses.
	Syntax:
	`SEND_COMMAND <DEV>," 'SP',<IR OUT>"`
	IR OUT: 1-252 and 256-65,000
	Example:
	`SEND_COMMAND IR_1, "'SP',25"`
	Pulses IR code 25 on IR_1 device.

XCHM
Changes the IR output pattern for the XCH command.
	Syntax:
	`SEND_COMMAND <DEV>,'XCH-<Mode>'`
	Mode: 0-4
	Example:
	`SEND_COMMAND IR_1,'XCH-3'`
	Sets the IR_1 device's extended channel command to mode 3.
	Mode 0 Example (default): [x] [x] <x> <enter>
	`SEND_COMMAND IR_1, 'XCH 3'`
	Transmits the IR code as 3-enter.
	`SEND_COMMAND IR_1, 'XCH 34'`
	Transmits the IR code as 3-4-enter.
	`SEND_COMMAND IR_1, 'XCH 343'`
	Transmits the IR code as 3-4-3-enter.
	Mode 1 Example: <x> <x> <x> <enter>
	`SEND_COMMAND IR_1, 'XCH 3'`
	Transmits the IR code as 0-0-3-enter.
	`SEND_COMMAND IR_1, 'XCH 34'`
	Transmits the IR code as 0-3-4-enter.
	`SEND_COMMAND IR_1, 'XCH 343'`
	Transmits the IR code as 3-4-3-enter.
	Mode 2 Example: <x> <x> <x>
	`SEND_COMMAND IR_1, 'XCH 3'`
	Transmits the IR code as 0-0-3.
	`SEND_COMMAND IR_1, 'XCH 34'`
	Transmits the IR code as 0-3-4.
	`SEND_COMMAND IR_1, 'XCH 343'`
	Transmits the IR code as 3-4-3.
	Mode 3 Example: [[100][100]…] <x> <x>
	`SEND_COMMAND IR_1, 'XCH 3'`
	Transmits the IR code as 0-3.
	`SEND_COMMAND IR_1, 'XCH 34'`
	Transmits the IR code as 3-4.
	`SEND_COMMAND IR_1, 'XCH 343'`
	Transmits the IR code as 100-100-100-4-3.
	Mode 4: Mode 4 sends the same sequences as the CH command. Only use Mode 4 channels 0-199.

XCH Transmits IR code in the format set with the XCHM mode command.	Syntax: `SEND_COMMAND <DEV>,'XCH <Channel>'` Channel: 0-999

ZAP
Deletes all IR data stored in CardFrame or NetModule ports 1-4.
	Syntax:
	`SEND_COMMAND <DEV>, 'ZAP'`
	Example:
	`SEND_COMMAND IR_1, 'ZAP'`
	Deletes IR commands in ports 1-4 of the IR_1 device.

AMX Corporation reserves the right to alter specifications without notice at any time.
For full warranty information, refer to the AMX Instruction Manual(s) associated with your Product(s).

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